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10/671,908	09/25/2003	Clifton Harold Bromley	03SW170 / ALBRP315US	8474

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EXAMINER
NORTON, JENNIFER L

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/671,908	BROMLEY, CLIFTON HAROLD	
	Examiner	Art Unit	
	Jennifer L. Norton	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4/13/06
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a Non-Final Office action in response to the Request for Continued Examination filed on 15 May 2006. Claims 1, 17, 29, 32, 35, 39 and 43 have been amended. Claims 1-43 are pending in this application.

Information Disclosure Statement

2. The correction to the Information Disclosure Statement was received on 13 April 2006. The correction is acceptable.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-11, 14-40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Pub. No.: 2002/0120921 (hereinafter Coburn) in view of U.S. Patent No. 5,551,030 (hereinafter Linden).

5. As per claim 1, Coburn teaches a system that facilitates generation of code from a HMI representation of objects in an industrial automation environment, comprising:

a component (Fig. 90, element 9812) that analyzes the HMI representation of objects, each object that comprises the HMI representation is dynamically subsumable into other objects included in the HMI representation to form distinct HMI objects that include features of both subsumed objects (pg. 6, par. [0069]-[0070]), and

a code generation component that generates code based at least upon the analyzed HMI objects (pg. 6, par. [0069] and Fig. 105, element 8007).

Coburn does not expressly teach the analysis based at least in part on a relatedness of each object that comprises the HMI representation and a feasibility determination for implementing the HMI representation.

Linden teaches an analysis based at least in part on a relatedness of each object that comprises the HMI representation and a feasibility determination for implementing the HMI representation (col. 4, lines 61-67 and col. 5, lines 1-20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include an analysis based at least in part on a relatedness of each object that comprises the HMI representation and a feasibility determination for implementing the HMI representation to provide integration of existing text based and graphic user interface applications into

an integrated graphical user environment without requiring application codes to be modified (col. 2, lines 55-58).

6. As per claim 2, Coburn as set forth above teaches the code being control code that governs actions of industrial components (pg. 6, par. [0070]).

7. As per claim 3, Coburn as set forth above teaches the code being at least one of ladder diagrams, function block diagrams, structured text, instruction lists, and sequential function charts (pg. 50, par. [0672], Fig. 1B and pg. 52, par. [0690]).

8. As per claim 4, Coburn as set forth above teaches the code relayed to at least one industrial component comprising a processing device (pg. 11, par. [0197] and Fig. 90, element 9814).

9. As per claim 5, Coburn as set forth above teaches the processing device being a programmable logic controller (pg. 11, par. [0197] and Fig. 90, element 9814).

10. As per claim 6, Coburn as set forth above teaches a library of disparate HMI objects (pg. 14, par. [0237] and [0238]).

11. As per claim 7, Coburn as set forth above teaches the HMI representation of objects comprises one or more HMI objects of the library (pg. 14, par. [0237] and [0238]).

12. As per claim 8, Coburn as set forth above teaches an editing component that enables editing of the HMI representation of objects (pg. 6, par. [0073], pg. 23, par. [0353] and [0354], pg. 25, par. [0377] and Figure 90, elements 9802 and 9806).

13. As per claim 9, Coburn as set forth above teaches the editing component comprising a modifiable template (pg. 6, par. [0073] and pg. 14. par. [0241]).

14. As per claim 10, Coburn as set forth above teaches a HMI comprising the system of claim 1 (pg. 38, par. [0520] and Fig. 90, element 8437).

15. As per claim 11, Coburn as set forth above teaches the HMI being a fixed HMI (pg. 38, par. [0520] and Fig. 90, element 8437).

16. As per claim 14, Coburn as set forth above teaches the code generation component comprises an intelligent component that automatically generates code of a program language desired by a user (pg. 6, par. [0070] and Fig. 90, element 9812).

17. As per claim 15, Coburn as set forth above teaches the code generation component comprises an intelligent component that automatically compiles code in an executable code format according to a processing device that receives the executable code (pg. 6, par. [0070] and [0071] and Fig. 90, element 9812).

18. As per claim 16, Coburn as set forth above teaches the code generation component outputs control code in a universal language, the control code automatically translated to a program language desired by a user by a first intelligent component, and the control code compiled into an executable code format according to a processing device that receives the executable code (pg. 6, par. [0070] and [0071]).

19. As per claim 17, Coburn teaches a system that facilitates industrial automation, comprising:

one or more HMI objects (pg. 14, par. [0237] and [0238]);

an industrial component (pg. 6, par. [0066] and [0067]); and

an industrial action (pg. 6, par. [0066] and [0067]);

an arrangement of the one or more HMI objects that represent at least one of:

an industrial system comprising at least one industrial component (pg. 6, par. [0066]); and

an industrial process comprising at least one industrial action (pg. 6, par. [0067] and [0069]); and

a code generation component that generates code based at least in part upon the arrangement of HMI objects (pg. 6, par. [0069], [0070] and [0071]) and an associative relationship between each of the one or more HMI objects that comprise the arrangement (pg. 6, par. [0069] and [0070] and pg. 32, par. [0448]).

Coburn does not expressly teach the one or more HMI objects subsumable based at least in part on a compatibility between two or more HMI objects and the associative relationship is based at least in part on a feasibility determination for associating each of the one or more HMI objects.

Linden teaches the one or more HMI objects subsumable based at least in part on a compatibility between two or more HMI objects and the associative relationship is based at least in part on a feasibility determination for associating each of the one or more HMI objects (col. 4, lines 61-67 and col. 5, lines 1-20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include the one or more HMI objects subsumable based at least in part on a compatibility between two or more HMI objects and the associative relationship is based at least in part on a feasibility determination for associating each of the one or more HMI objects the one or more HMI objects to provide integration of existing text based and graphic user

interface applications into an integrated graphical user environment without requiring application codes to be modified (col. 2, lines 55-58).

20. As per claim 18, Coburn as set forth above teaches an editing component that enables editing of the one or more HMI objects (pg. 6, par. [0073], pg. 23, par. [0353] and [0354], pg. 25, par. [0377] and Figure 90, elements 9802 and 9806).

21. As per claim 19, Coburn as set forth above teaches the editing component comprising a modifiable template (pg. 14, par. [0241] and pg. 6, par. [0073]).

22. As per claim 20, Coburn as set forth above teaches the editing component facilitating multi-user development (pgs. 48-49, par. [0649]).

23. As per claim 21, Coburn as set forth above teaches a creation component that enables creating HMI objects (pg. 47, par. [0621] and [0625]).

24. As per claim 22, Coburn as set forth above teaches the creation component comprising a modifiable template (pg. 47, par. [0626] and [0627]).

25. As per claim 23, Coburn as set forth above teaches the modifiable template employing graphical representations of HMI objects (pgs. 47-48, par. [0630] and [0633]).

26. As per claim 24, Coburn as set forth above teaches the modifiable template comprising a nested template (pg. 47, par. [0626] and [0627]).

27. As per claim 25, Coburn as set forth above teaches modification of the modifiable template effectuates altering one or more objects generated by the modifiable template (pg. 47, par. [0626] and [0627]).

28. As per claim 26, Coburn as set forth above teaches an object generator that automatically generates the HMI objects (pg. 6, [0069] and [0070]).

29. As per claim 27, Coburn as set forth above teaches the object generator utilizing artificial intelligence techniques to infer existence of one or more components within the industrial system (pg. 6, par. [0069]). The automatic generation of rules is considered to be as artificial intelligence technique within the meaning as set in the applicant's disclosure.

30. As per claim 28, Coburn as set forth above teaches the object generator utilizing artificial intelligence techniques to infer existence of one or more actions within the industrial process (pg. 6, par. [0069] and [0070]). The automatic generation of rules is considered to be as artificial intelligence technique within the meaning as set in the applicant's disclosure.

31. As per claim 29, Coburn as set forth above teaches the object generator receiving data comprising information relating to at least one of:

the industrial system (pg. 6, par. [0066] and [0067]);

the industrial process (pg. 6, par. [0066] and [0067]); and

generating HMI objects based at least in part on the data (pg. 6, par [0069] and [0070]).

32. As per claim 30, Coburn as set forth above teaches the arrangement of HMI objects displayed as a single HMI object (pg. 6, par. [0069]).

33. As per claim 31, Coburn as set forth above teaches a library of disparate HMI objects (pg. 14, par. [0237] and [0238]).

34. As per claim 32, Coburn as set forth above teaches the arrangement of HMI objects comprising at least one input and at least one output (pg. 6, par. [0067] and [0069]).

35. As per claim 33, Coburn as set forth above teaches a connection mechanism that facilitates connecting HMI objects (pg. 6, par. [0069]).

36. As per claim 34, Coburn as set forth above teaches a system embodied in a computer readable medium (pg. 46-47, par. [0620] and Fig. 1A, element 20).

37. As per claim 35, Coburn teaches a system that automatically generates code to facilitate industrial automation, comprising:

means for receiving at least one HMI object for analysis, the HMI object representing one or more of:

an industrial component (pg. 6, par. [0066]); and

a particular action of an industrial process (pg. 6, par. [0068]);

means for arranging the at least one HMI object to represent one or more of:

an industrial system (pg. 6, par. [0069]); and

an industrial process (pg. 6, par. [0068]); and

means for generating code based on the arrangement of the at least one HMI object (pg. 6, par. [0069], [0070], and [0071]) and

Coburn does not expressly teach the analysis of an interrelationship between the at least one HMI object that comprises the arrangement, the at least one HMI object combinable with one or more disparate HMI objects that comprise the arrangement to form a distinct HMI object with characteristics of the combined HMI objects the combination based at least on a feasibility determination.

Linden teaches the analysis of an interrelationship between the at least one HMI object that comprises the arrangement, the at least one HMI object combinable with one or more disparate HMI objects that comprise the arrangement to form a distinct HMI object with characteristics of the combined HMI objects the combination based at least on a feasibility determination (col. 4, lines 61-67 and col. 5, lines 1-20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include the analysis of an interrelationship between the at least one HMI object that comprises the arrangement, the at least one HMI object combinable with one or more disparate HMI objects that comprise the arrangement to form a distinct HMI object with characteristics of the combined HMI objects the combination based at least on a feasibility determination to provide integration of existing text based and graphic user interface

applications into an integrated graphical user environment without requiring application codes to be modified (col. 2, lines 55-58).

38. As per claim 36, Coburn as set forth above teaches a means for creating the HMI objects (pg. 47, par. [0621] and [0625]).

39. As per claim 37, Coburn as set forth above teaches means for editing the HMI objects (pg. 6, par. [0073], pg. 23, par. [0353] and [0354], pg. 25, par. [0377] and Figure 90, elements 9802 and 9806).

40. As per claim 38, Coburn as set forth above teaches a means for relaying the code to one or more processing devices (pg. 31, par. [0436] and Fig. 90, element 8323).

41. As per claim 39, Coburn teaches to a method for automatically generating code to govern actions of an industrial system and/or process comprising:

receiving a HMI representation of at least one of:

an industrial system (pg. 6, par. [0068]); and

an industrial process (pg. 6, par. [0068]); and

Coburn does not expressly teach automatically generating code based at least in part upon an interconnectedness analysis of the representation, the interconnectedness analysis employs a feasibility determination to ascertain compatibility of each HMI object included in the HMI representation, each HMI object associable with disparate HMI objects to create a distinguishable HMI object with synthesized characteristics.

Linden teaches to automatically generating code based at least in part upon an interconnectedness analysis of the representation, the interconnectedness analysis employs a feasibility determination to ascertain compatibility of each HMI object included in the HMI representation, each HMI object associable with disparate HMI objects to create a distinguishable HMI object with synthesized characteristics (col. 4, lines 61-67 and col. 5, lines 1-20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include automatically generating code based at least in part upon an interconnectedness analysis of the representation, the interconnectedness analysis employs a feasibility determination to ascertain compatibility of each HMI object included in the HMI representation, each HMI object associable with disparate HMI objects to create a distinguishable HMI object with synthesized characteristics to provide integration of existing text based and graphic user interface applications into an integrated graphical

user environment without requiring application codes to be modified (col. 2, lines 55-58).

42. As per claim 40, Coburn as set forth above teaches automatically generating the representation of the industrial system and/or process by utilizing artificial intelligence techniques (pg. 6. [0069] and pg. 47, par. [0622]). The automatic generation of rules is considered to be as artificial intelligence technique within the meaning as set in the applicant's disclosure.

43. As per claim 43, Coburn teaches to a data packet that passes between at least two computer processes, comprising:

a graphical representation of at least one of

an industrial system (pg. 6, par. [0066]) and

an industrial process (pg. 6, par. [0066]),

wherein the graphical representation is utilized to automatically generate code to govern the actions of at least one industrial component (pg. 6, par. [0069] and [0070]).

Coburn does not expressly teach the generation of code based at least in part on an analysis of relatedness of one or more objects that comprise the industrial system and the industrial process and a feasibility determination for implementing the graphical representation, the one or more objects are dynamically combinable with at least one

disparate object to form a combined object with characteristics inherited from the one or more objects and the at least one disparate object.

Linden teaches to the generation of code based at least in part on an analysis of relatedness of one or more objects that comprise the industrial system and the industrial process and a feasibility determination for implementing the graphical representation, the one or more objects are dynamically combinable with at least one disparate object to form a combined object with characteristics inherited from the one or more objects and the at least one disparate object (col. 4, lines 61-67 and col. 5, lines 1-20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include the generation of code based at least in part on an analysis of relatedness of one or more objects that comprise the industrial system and the industrial process and a feasibility determination for implementing the graphical representation, the one or more objects are dynamically combinable with at least one disparate object to form a combined object with characteristics inherited from the one or more objects and the at least one disparate object to provide integration of existing text based and graphic user interface applications into an integrated graphical user environment without requiring application codes to be modified (col. 2, lines 55-58).

44. Claims 12-13 and 41-42 rejected under 35 U.S.C. 103(a) as being unpatentable over Coburn in view of Linden in further view of U.S Patent Pub. No.: 2004/0260518 (referred to Polz hereinafter).

45. As per claim 12, Coburn does not expressly teach the HMI being a tethered HMI.

Polz teaches a HMI unit constitutes a notebook, which is connected to the intranet of a facility (pg. 2, par. [0022]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include a tethered HMI. A tethered portable HMI is advantageously mobile (pg. 2, par. [0022]).

46. As per claim 13, Coburn does not expressly teach HMI being a wireless HMI.

Polz teaches a HMI unit can be a mobile radio telephone or cell phone (pg. 2, par. [0024]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include a wireless

HMI. A wireless HMI offers the advantage of identifying the nearest automation component to a service technician that he is situated in front of (pg. 2, par [0026]).

47. As per claim 41, Coburn does not expressly teach the method further comprising:

automatically generating the representation of the industrial system and/or process by utilizing plug-and-play technologies.

Polz teaches to a plug-and-play cable links between an object and automation component (pg. 2, par. [0025]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include plug-and-play technologies. Plug and play is advantageous because it provides automatic configuration of hardware devices without have to restart the computer and assures the user that hardware devices can be installed without resorting to manual hardware configuration of either the device or the PC into which the device is being installed.

48. As per claim 42, Coburn as set forth above teaches arranging HMI objects that represent at least one of

an industrial system (pg. 6, par. [0066]); and

an industrial process (pg. 6, par. [0067] and [0069]);

to create the representation of the industrial system and/or process (pg. 6, par. [0069], [0070], and [0071]).

Response to Arguments

49. Applicant's arguments, see Remarks pgs. 9-10 with respect to the rejection(s) of claims 1-11, 14-40 and 43 under 35 U.S.C. 102(b) has been considered but is moot in view of the new ground(s) of rejection.

The Linden reference discloses the limitations "feasibility determination" and "synthesized HMI objects", (col. 4, lines 61-67 and col. 5, lines 1-20) "the library 8 obtains this information, it consults the rule database 10, in step 18. The library 8 searches the rule file for a matching rule. For the present, a general description of the rules will be given. A more detailed description of the rules, with examples, appears below.

Each rule contains a "selection clause" that specifies a set of conditions on window properties and object attributes. The selection clauses of the rules are examined, one by one, to compare the window properties and object attributes with those specified in the selection clauses of the rules. If the window properties obtained in step 14, as well as the attributes of the object selected by the user, satisfy these conditions, a matching rule is found and the search ends. Otherwise, the search continues by considering the next

rule in the file.

Step 20 tests whether a matching rule was found. If no matching rule is found, then the library 8 detects an error condition (step 22) and returns control to the enabled application 4. In response, either no action is taken, or an appropriate action, such as displaying an error message, is taken. In one preferred embodiment, the error messages includes a return code stating the nature of the failure.

In addition to the selection clause, each rule contains an "action clause". If a matching rule is found, the library 8 proceeds by executing the sequence of actions specified by the matching rule's action clause (step 24)."

50. Applicant's arguments, see Remarks pg. 11 with respect to the rejection(s) of claims 12-13 and 41-42 under 35 U.S.C. 102(b) have been considered but are moot in view of the new ground(s) of rejection.

Claims 12-13 and 41-42 stand rejected under 35 U.S.C. 102(b) over Coburn in view of Linden in further view of Polz as set forth above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references are cited to further show the state of the art with respect to modifying HMI objects.

U.S. Patent Publication No. 2001/0019328 discloses a data monitoring and analysis system.

U.S. Patent No. 6,326,147 discloses systems, methods, graphical user interfaces, and articles of manufacture to allow for biological assay preparation and automated biological macromolecule purification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer L. Norton whose telephone number is 571-272-3694. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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